

CLAIMS

1. A field-attachable, disconnectable electrical connector for use with MC-HL cable, comprising:

(a) a housing, said housing including a first end and an opposite second end, said first end including means for connecting a plurality of electrical conductors thereto and said second end including means adapted for connecting to a stationary electrical connector, and including means for providing an electrical continuity from said means for connecting a plurality of electrical conductors to said means adapted for connecting to a stationary electrical connector;

(b) means for providing an environmental seal intermediate said cable and said connector; and

(c) means for mechanically securing said cable to said connector.

2. The field-attachable, disconnectable electrical connector of claim 1 wherein said means for providing an electrical continuity from said means for connecting a plurality of

electrical conductors to said means adapted for connecting to a stationary electrical connector includes a plurality of power pins disposed in said housing, and wherein each of said plurality of power pins is connected electrically at a first end to a portion of said means for connecting a plurality of electrical conductors thereto and wherein each of said plurality of power pins is connected electrically at a second end to a portion of said means adapted for connecting to a stationary electrical connector.

3. The field-attachable, disconnectable electrical connector of claim 2 wherein an insulation is provided intermediate each of said power pins and a casing of said housing.

4. The field-attachable, disconnectable electrical connector of claim 3 wherein said housing includes a ring that is attached to an interior of said housing and wherein an opposite end of said ring is attached to a coupling nut, and wherein said coupling nut is adapted to rotate about a center longitudinal axis and wherein said coupling nut includes threads adapted to cooperate with said stationary electrical connector.

5. The field-attachable, disconnectable electrical connector of claim 4 including means for sealing said ring with respect to said casing of said housing and said coupling nut with respect to said ring.

6. The field-attachable, disconnectable electrical connector of claim 1 wherein said means for connecting a plurality of electrical conductors thereto includes a power contact pin that is crimped onto each of said plurality of electrical conductors of said cable and a corresponding socket in said first end of said housing, and wherein each of said power contact pins is adapted to connect to one of said corresponding sockets.

7. The field-attachable, disconnectable electrical connector of claim 6 including means for latching each of said power contact pins to each of said corresponding sockets sufficient to retain each of said power contact pins in each of said corresponding sockets.

8. The field-attachable, disconnectable electrical connector of claim 7 wherein said means for latching each of said power contact pins to each of said corresponding sockets includes a plurality of locking flanges that are disposed circumferentially around a body of each power contact pin and wherein said plurality of locking flanges are adapted to engage with an interior of each of said corresponding sockets.

9. The field-attachable, disconnectable electrical connector of claim 1 including a sealing grommet that is disposed over said plurality of conductors and adjacent to said first end of said housing, and wherein said sealing grommet includes a groove therein that is adapted to permit at least one ground wire to pass through, said ground wire including means for electrical and mechanical connection to said first end of said housing.

10. The field-attachable, disconnectable electrical connector of claim 1 wherein said means for providing an environmental seal intermediate said cable and said connector includes a sealing grommet that is disposed over said plurality of conductors and adjacent to said first end

of said housing, and wherein said sealing grommet includes a groove therein that is adapted to permit at least one ground wire to pass through, said ground wire including means for electrical and mechanical connection to said first end of said housing and including a backshell, said backshell including a cylindrical shape and threads adapted to attach a first end of said backshell to said first end of said housing, and wherein said backshell includes an epoxy therein sufficient to fill a first void.

11. The field-attachable, disconnectable electrical connector of claim 1 wherein said means for mechanically securing said cable to said connector includes a retaining nut that is adapted to cooperate with portion of said housing sufficient to urge an armor grip to engage a predetermined amount with an armor cladding of said cable.

12. The field-attachable, disconnectable electrical connector of claim 1 wherein said means for mechanically securing said cable to said connector includes a backshell, said backshell including a cylindrical shape and threads adapted to attach a first end of said backshell to said first end of said housing, and wherein said backshell

includes a second opposite end and wherein said second opposite end includes second threads, and including a retaining nut that is adapted to cooperate with said second threads sufficient to urge a pair of split armor grips to engage a predetermined amount with an armor cladding of said cable, each of said split armor grips including a substantially cylindrical shape with a first taper at a first end thereof and a second taper at a second end thereof, wherein when said retaining nut is tightened said first taper is urged into contact with a corresponding inner first taper of said backshell sufficient to urge a first end of each of said split armor grips closer toward a longitudinal axis of said cable and said second taper is urged into contact with a corresponding inner second taper of said retaining sufficient to urge an opposite end of said split armor grips closer toward a longitudinal axis of said cable and wherein each of said split armor grips includes means for engaging said armor cladding disposed on interior surface thereof.

13. The field-attachable, disconnectable electrical connector of claim 1 wherein said means for providing an environmental seal intermediate said cable and said connector includes a sealing grommet that is disposed over

said plurality of conductors and adjacent to said first end of said housing, and wherein said sealing grommet includes a groove therein that is adapted to permit at least one ground wire to pass through, said ground wire including means for electrical and mechanical connection to said first end of said housing and including a backshell, said backshell including a cylindrical shape and threads adapted to attach a first end of said backshell to said first end of said housing, and wherein said backshell includes an epoxy therein sufficient to fill a first void and wherein said backshell includes a second opposite end and wherein said second opposite end includes second threads, and including a retaining nut that is adapted to cooperate with said second threads sufficient to urge a pair of split armor grips to engage a predetermined amount with an armor cladding of said cable, each of said split armor grips including a substantially cylindrical shape with a first taper at a first end thereof and a second taper at a second end thereof, wherein when said retaining nut is tightened said first taper is urged into contact with a corresponding inner first taper of said backshell sufficient to urge a first end of each of said split armor grips closer toward a longitudinal axis of said cable and said second taper is urged into contact with a corresponding inner second taper of said retaining sufficient to urge an opposite end of said

split armor grips closer toward a longitudinal axis of said cable and wherein said retaining nut includes an epoxy therein intermediate said pair of split armor grips and an opposite end of said retaining nut sufficient to fill a second void.

14. The field-attachable, disconnectable electrical connector of claim 13 including a portion of cold shrink tubing disposed over a portion of said electrical connector and over a portion of said cable.

15. The field-attachable, disconnectable electrical connector of claim 1 including means for attaching a certification label thereto.

16. The field-attachable, disconnectable electrical connector of claim 1 wherein said housing includes a radius.

17. The field-attachable, disconnectable electrical connector of claim 16 wherein said radius includes ninety degrees of arc.



18. A method for field-attaching a disconnectable electrical connector to an MC-HL cable sufficient to attain compliance with a predetermined standard, comprising the steps of:

(a) providing a housing, said housing including a first end and an opposite second end, said first end including means for connecting a plurality of electrical conductors thereto and said second end including means adapted for connecting to a stationary electrical connector, and including means for providing an electrical continuity from said means for connecting a plurality of electrical conductors to said means adapted for connecting to a stationary electrical connector;

(b) providing an environmental seal intermediate said cable and said connector; and

(c) mechanically securing said cable to said connector.

19. A method for field-attaching a disconnectable electrical connector to an MC-HL cable sufficient to attain compliance with a predetermined standard, comprising the steps of:

- (a) preparing a first end of said cable;
- (b) installing a section of cold shrink tubing over said first end of said cable and onto said cable a sufficient distance;
- (c) installing a retaining nut over said first end of said cable and onto said cable a sufficient distance;
- (d) installing a backshell over said first end of said cable and onto said cable a sufficient distance;
- (e) installing a sealing grommet over said first end of said cable and onto said cable a sufficient distance;
- (f) electrically attaching each conductor in said cable to a corresponding socket in a first end of a housing, said housing including an opposite second end that includes means adapted for connecting to a stationary electrical connector, and said housing including means for providing electrical continuity from said

corresponding socket to said means adapted for connecting to a stationary electrical connector;

(g) urging said sealing grommet to said first end of said housing;

(h) attaching at least one ground wire to said housing;

(i) attaching a first end of said backshell to said first end of said housing;

(j) sealing a first void in said backshell;

(k) placing a pair of split armor grips partially in an opposite second end of said backshell;

(l) urging said retaining ring proximate said second end of said backshell and attaching said retaining ring to said second end of said backshell sufficient to urge said pair of split armor grips into engagement with an armor cladding of said cable; and

(m) sealing a second void in said retaining ring.

20. The method of claim 19 wherein the step of sealing said first void includes the step of providing an overall quantity of epoxy and of filling said first void with a first predetermined quantity of said epoxy and wherein the step of sealing said second void includes the step of filling said second void with a second predetermined quantity of said epoxy.

21. The method of claim 20 including the step of determining if said connector is properly attached to said cable.

22. The method of claim 21 including the step of comparing the summation of said first predetermined quantity of said epoxy and said second predetermined quantity of said epoxy with said overall quantity of epoxy.

23. The method of claim 22 including the step of determining that an necessary component has been omitted by observing that said summation of said first predetermined quantity of said epoxy and said second predetermined quantity of said epoxy exceeds the volume of said overall quantity of epoxy.

24. The method of claim 22 including the step of determining that an excess of components have been included by observing that said summation of said first predetermined quantity of said epoxy and said second predetermined quantity of said epoxy is substantially less than the volume of said overall quantity of epoxy.